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NOTES ON IRISH VEGETATION: No.1. THE VEGETATION OF SHINGLE IN CO. LOUTH

James White

Abstract

The vegetation of coastal shingle in Co.Louth is described. It has a well-defined floristic composition and constitutes a new association, Raphano-Betetum. *Atropa belladonna* has been found in this vegetation, the first record for Co.Louth.

Introduction

Shingle occurs in several places around the coast of Ireland (Stephens, 1970). On the coast of Co.Louth south of Dundalk an inactive shingle bar runs almost without interruption to Dunany Point and thence intermittently further south towards Clogher Head. The shingle is inactive because it occurs on a post-glacial raised coast: around Castlebellingham this coastal plain is considered 'to show the finest sequence of raised beaches in Ireland'(An Foras Forbartha,1981). In this note I describe the vegetation of this stable shingle from several sites between Dromiskin and Dunany Point. There are varying degrees of exposure and width of shingle along this section: at Dromiskin it is no more than, perhaps, ten metres wide and is protected seawards by an extensive *Spartina* x *townsendii* marsh; south of Anagassan it is more exposed to the sea and in places up to 20 metres wide. It is vegetated to varying degrees also: at Dromiskin it is well-covered, whereas at Castlebellingham large areas are quite bare. However even at first sight there is a recurrent combination of species along the shingle, dominated in summer by tall vigorous *Raphanus maritimus*.

The vegetation

In the last week of August 1981 I made several vegetation descriptions (relevés) along the coast; those of the shingle are listed in Table 1. The cover/abundance values and the rearrangement of the relevés conform to the usual phytosociological conventions (Mueller-Dombois and Ellenberg,1974). The ordered table shows only those species which occur in three or more relevés; the remainder are listed separately. The relevé size varies considerably and reflects the

size and shape of the sample area necessary to obtain a relevé that is visually homogeneous. Adjacent relevés were taken in some instances along the length of the shingle in order to demarcate a well-defined physiognomic difference in the vegetation, usually between the seaward slope and the plateau of the shingle. Such pairs are relevés 1 and 10, 2 and 9, 4 and 12, in each case the first number indicating a relevé on the seaward slope. Relevé 3 was taken on a sand/shingle mixture, a few hundred metres from relevé 1.

It is clear from Table 1 that such large-scale visual discrimination along the shingle is reflected in the detailed floristic composition. The first three relevés represent a foreshore environment which, while not necessarily poor in species, has low cover and lacks a combination of species more typical of the upper parts of the shingle ridge. The species of the lower part persist into the upper part and may indeed (in the case of *Galium aparine*) become a notable feature of the vegetation. The main shingle vegetation is quite well-defined, as relevés4-11 indicate and represent a combination of species which is not, I believe, to be found in other habitats. The physiognomy of this vegetation is quite distinctive, with vigorously-growing *Raphanus* and *Rumex* dominating. *Galium aparine* forms extensive prostrate mats up to 1.5 m in diameter. *Geranium robertianum* thrives in places.

Relevé 12 is somewhat unusual in that it has not only low cover and a small species number but has very distinctive scattered colonies of *Polygonum* cf.*amphibium*, which was not flowering. Both relevés 4 and 12 are adjacent to each other on a fine stretch of shingle S. of Castlebellingham, on which I also found two well-grown fruiting plants of *Atropa belladonna*, the first record for this plant in Co. Louth. It grows in vegetation similar to that in relevé 4. *Rumex crispus* in relevés 4 and 12 had more striking tubercules on all three fruit valves than I saw elsewhere on the shingle and can be unhesitatingly referred to var.*trigranulatus*.

In the table I have listed at the end a few species more typical of nearby grassland which occur occasionally on the shingle; of these, *Daucus* seems to be the most constant.

Synsystematic classification

The species combination shown in Table 1 indicates that this vegetation belongs to the phytosociological class Honkenyo-Elymetea arenarii Tx. 1966. which is poorly known in Ireland (White and Doyle,1982). The class was defined by Tüxen(1966) to encompass mostly boreal vegetation of coast shingle banks and boulder beaches. It is partly named from *Leymus(=Elymus)arenarius*, not *Elymus(=Agropyron)repens*. *Leymus* is not common on the Irish coast, although it is spreading in Co.Louth (Synnott,1967); but I did not encounter it on shingle. The combination of *Rumex crispus*, *Beta*, *Raphanus*, *Elymus repens*, *Honkenya* and *Sonchus arvensis* are not untypical of the class, although there are affinities, as Tüxen(1966) indicated, to the Agropyro -Rumicion crispi Nordh.1940 (class Plantaginetea majoris Tx. et Prsg. 1950). Géhu and Géhu(1969) defined a new alliance Honkenyo-Crambion maritimae (in a new class Agropyretea pungentis) which is characterised by *Honkenya*, *Crambe maritima*, *Sonchus maritimus*, *Rumex crispus* var.*trigranulatus*, *Lavatera arborea*, *Raphanus maritimus* and *Beta vulgaris*. Later they recognised that it should be assigned to Tüxen's Honkenyo-Elymetea arenarii (Géhu and Géhu-Franck,1979). The vegetation of the shingle in Co.Louth can be assigned therefore to this alliance and class.

However there is no previously described association to which the vegetation can be more precisely assigned synsystematically. Although Géhu and Géhu(1969) define a Raphanetum maritimi, neither its ecology nor floristic composition (insofar as one may infer it from their paper) are coincident with the vegetation shown in Table 1. Since this vegetation is floristically and ecologically distinctive, I believe it merits formal association rank and should be referred to as Raphano-Betetum. Relevé 7 is the type relevé in accordance with the Code of Phytosociological Nomenclature (Barkman *et al*,1976).

Note added in Press:

The shingle bank south of Castlebellingham was revisited in early January 1982 after the severe easterly gales which lashed the coast in December. The site of *Atropa belladonna* had been heavily disturbed by wave action and there was no trace of the two plants seen earlier. Whether it re-establishes itself at this site or not remains to be seen. Photographs of the living plants on the shingle have been

deposited in the Herbarium of the National Botanic Gardens, Glasnevin, as vouchers for its 1981 occurrence in Co.Louth.

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Location of relevés 1, 3, 5, 10: S.E. of Annagassan(O 1193); 2, 9: near Hermitage(O 1392); 4, 12: E. of Castlebellingham(O 0795); 6: Coast at Annagassan village; 7, 11: S.E. of Annagassan(O 1093); 8:S. of Dromiskin(O 0797).

Size of relevés (m^2) 1, 7, 11: 20 x 2; 4, 5: 20 x 3; 12: 20 x 5; 2, 8, 9, 10: 10 x 2; 3: 10 x 5; 6: 3 x 3.

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TABLE 1: Vegetation of shingle

Releve no.	1	2	3	4	5	6	7	8	9	10	11	12
% cover	<5	30	30	40	50	60	60	80	60	60	30	10
Number of species	5	11	10	12	10	18	15	16	11	12	12	7
Atriplex hastata	1	1	2	2	2	+	2	$+^{o}$				
Sonchus asper		2	1	2		+	2	+		+	+	
Galium aparine	+	+	1	2	2	1	2					+
Rumex crispus			+	2	2	1	2	2	2	+	1	2
Beta maritima				+	3	1	2	+	2	+	+	
Raphanus maritimus				+	+	+	3	+	3	+	+	
Elymus repens		1			+	2	2	3	2		2	
Honkenya peploides			+			+	+	2		2		
Sonchus arvensis		+			1		1	1	2			
Geranium robertianum				2		2		+		1		2
Matricaria maritima	+	2	2	1	+	2	+	3	2	3		
Daucus carota			+		+	+	+	+	1			
Festuca rubra						+	+	2	2			
Arrhenatherum elatius							1	1			2	
Plantago lanceolata								+		+	2	
Agrostis stolonifera				$+^{o}$		+		2				
Senecio jacobaea						1			+		+	

Additional species: Artemisia vulgaris + in 6; Cirsium arvense + in 10; Cirsium vulgare + in 8, $+^{o}$ in 4; Crepis capillaris 1 in 2, 1 in 6; Euphorbia helioscopia + in 2; Euphorbia peplus + in 3; Glaucium flavum 1 in 6; Glaux maritima + in 8; Leontodon sp. + in 9; Lolium perenne $+^{o}$ in 2, + in 3; Lotus corniculatus 1 in 5, 1 in 10; Malva sylvestris + in 6; Papaver dubium + in 2, + in 6; Polygonum cf. amphibium + in 12; Potentilla anserina + in 4, 1 in 10; Potentilla reptans + in 12; Rubus fruticosus 1 in 11; Senecio vulgaris 1 in 2; Solanum dulcamera 2 in 11; Taraxacum officinale + in 3, + in 10; Tragopogon pratensis + in 11; Urtica dioica $+^{o}$ in 4.

NOTES ON INSECT PESTS RECEIVED FOR IDENTIFICATION BY THE NATIONAL MUSEUM OF IRELAND

J.P. O'Connor

Each year, the National Museum receives numerous insects for identification. Many of the enquiries concern pest species, *i.e.* insects which cause distress and/or damage and whose presence the enquirer wishes to eliminate. This material is submitted by various groups associated with health and hygiene (*e.g.* health inspectors, medical doctors, veterinarians, agricultural inspectors, industrialists, universities, regional technical colleges, government departments). Members of the public also submit specimens directly to the museum. Since little appears to have been reported about these pests that cause problems on domestic or commercial premises in this country, these notes concentrate therefore mainly upon enquiries arising from these sources.

In many cases, the insects were not determined to species due to poor condition, immaturity or lack of time. Nevertheless, the summarised records presented here may be of interest. Because of the sensitive nature of many of the enquiries, precise locations and names of collectors and enquirers are not given. Since most of the recorded species are associated with man and his products, they are easily transported by him from one locality to another. The generalised locality data are not therefore as disadvantageous as they would be with non-synanthropic insects. In addition, as the result of information supplied to the enquirers, when necessary infestations have been eradicated.

The records are based mainly on enquiries which received a written reply. A large number of problems are solved by telephone but it is impractical to record them. In many instances, the data provided with material have been scant or non-existent. These shortcomings are indicated. Enquiries which arose through curiosity are not included. In addition, ones dealing with arachnids have not been compiled. These may be reported upon at a later date. This report covers the period April 1975 to May 1981. Voucher specimens of most species are deposited in the National Museum.

Information concerning life-histories, etc., of most of the recorded species will be found in Bateman(1979), Busvine(1980), Goodhue(1980), Hickin(1974, 1975), Hinton and Corbet(1975), Mourier and Winding(1977) and Munro(1966). When possible, nomenclature follows that of Seymour (1979).

American Cockroach (*Periplaneta americana*(L.))

Dublin: specimens were found in a crate from Japan, in rubber from Malaysia (industrial premises); in goods from Burundi (Dublin Docks); in plastic bag containing bananas from Columbia (Dublin Corporation Fresh Fruit and Vegetable Market).

Andrena (*Andrena nigroaenea*(Kirby))

Dublin: specimen in bakery; specimens in houses; specimens said to be digging up lawns. All these records refer to adults and date from the same period, *circa* May 1978, when there appears to have been a population explosion of this species of burrowing bee in the Dublin area.

Ants (Formicidae)

Dublin: *Lasius fuliginosus*(Latreille) in marmalade; *Lasius* sp. (damaged) - workers and winged adults causing nuisance. For records of the Black ant (Common), please see below.

Aphids (Aphididae)

Dublin: specimens discovered in sandwich containing lettuce, egg and tomato filling purchased in shop.

Australian cockroach (*Periplaneta australasiae*(Fabricius))

Cork: in box of bananas purchased from Cash and Carry. The bananas had originated in Ecuador.

Dublin: in hardwood imported from Kuala Lumpur (industrial premises); in bananas (supermarket).

Australian spider beetle (*Ptinus tectus* Boieldieu)

Dublin: large numbers in excrement left by builders in attic resulting in adults dispersing throughout premises, in beds and on window ledges of newly acquired second-hand premises, in modern premises, breeding in damp conditions underneath floor covering of bedroom, in a chimney, in a package, in chocolate, several other instances without data (all houses); in chocolate, on

premises (both industrial).
Galway: under carpets and skirtings (house).
Kerry: numerous in box of dried fishfood (*Daphnia*) obtained from shop.
Louth: in package of biscuits.
The submitted specimens were predominantly adults.

Bacon beetle (*Dermestes lardarius* L.)
Dublin: larva crawling about, larva in flour (probably originated in nearby contaminated area), in coal bunker underneath food storage cupboard in kitchen, adult in bath, several records without data (all houses); larva pupating in chocolate, adult cooked in curry, adult in tin of biscuits which included chocolate ones (all shops); larva in bakery; larva in chocolate factory.

Bean and pea beetles (*Bruchus* spp.)
Dublin: two records of adults in lentils purchased in shops.

Bed bug (*Cimex lectularius* L.)
Dublin: in flat.
Leitrim: in bed clothes by irate landlady who had two visitors of the "long haired type" on fishing holiday.

Biscuit beetle (*Stegobium paniceum*(L.))
Dublin: in seeds, "plaguing" workers in post office building, in bottled parsley (all adults).
Galway: large numbers infesting purchased coriander (adults).

Black ant, common (*Lasius niger*(L.))
Dublin: in factory produce in dwelling, in private house.
Wexford: in a hotel's hairdressing salon (originating from behind sinks).

Bluebottle (*Calliphora* spp.)
Dublin: larvae and puparia in house, larvae and puparia on outside of cartons containing raisins and sultanas from Sicily and Turkey (from ship's hold).
Limerick: larva in a ham, larva on a chicken thigh.

Broad-horned flour beetle (*Gnatocerus cornutus*(Fabricius))
Cork: adults in flour spillage beneath flour bags with larvae infesting flour in small gaps between floor boards (bakery).

Brown house moth (*Hofmannophila pseudospretella*(Stainton))
Dublin: larvae eating carpets (adults reared in museum), under carpets, in clothes, in bathroom, larvae infesting wool and other débris between floorboards, several records without data (all houses); in shop windows, larvae feeding on culture plate.
Limerick: common in faeces which builders had left in attic of house.
Mayo: in bakery.
Wexford: in caravan.

Cadelle beetle (*Tenebroides mauritanicus*(L.))
Louth: in pollard pellets from Ghana (with *Tribolium castaneum*) (adult).

Cat flea (*Ctenocephalides felis*(Bouche))
Dublin: caused a problem in three bedrooms on the top floor of a domestic dwelling. The legs of the ladies of the house were bitten and became quite inflamed.

Chloropid flies (Chloropidae)
Dublin: adults in house.

Clothes moth, common (*Tineola bisselliella*(Hummel))
Dublin: adults in photographic fluid.

Cluster fly (*Pollenia rudis*(Fabricius))
Wexford: adults in a private house where the central heating was turned up high when visited in April 1977. The problem had occurred over three years.

Cockchafer (*Melolontha* spp.)
Innumerable instances of adults entering houses.

Cockroach, common (*Blatta orientalis* L.)
Cork: specimen embedded in loaf of bread purchased in shop.
Dublin: live nymphs in wrapped bread, nymph in house, large population under floorboards of old house, leg (no other data).
Kerry: adult in toilet (ladies) of hotel.

Dog flea (*Ctenocephalides canis*(Curtis))
Wexford: large numbers in premises, probably originated in outside source.

Dor beetle (*Geotrupes stercocarius*(L.))
Limerick: flying into horse breeder's premises with *Aphodius rufipes*.

Drone fly (*Eristalis tenax*(L.))
Galway: large numbers of adults invading house, probably breeding in outside drains.

Dung beetle (*Aphodius rufipes*(L.))
Limerick: flying into horse breeder's premises with *Geotrupes stercocarius*.

Earwig, common (*Forficula auricularia*)
Dublin: invading house via drain pipes.

Firebrat (*Thermobia domestica*(Packard))
Galway: specimens in hot press of house. They were also hidden in spaces between the floor tiles and walls of kitchen.

Forest bug (*Pentatoma rufipes*(L.))
Louth: specimen in house, September.

Fruit flies, small (Drosophilidae)
Dublin: in milk bottle, dead adults in chipped potatoes purchased at a "take away", dead adults in syringes containing anabolic steroids in benzyl alcohol and arachnis oil at an industrial premises, several records without data.

Fur beetle (*Attagenus pellio*(L.))
Dublin: adult, larva under lino (all houses).

Furniture beetle, common (*Anobium punctatum*(Degeer))
Dublin: in furniture in house, in structural timbers of house, in court.

German cockroach (*Blatella gemanica*(L.))
Dublin: houses, in sealed throat swabs.
Limerick: in catering kitchen.

Giant wood wasp (*Urocerus gigas*(L.))
Numerous specimens each year.

Globular spider beetle (*Trigonogenius globulus* Solier)
Dublin: in house with *Ptinus tectus* and *Niptus hololeucus*.

Gnat, common (*Culex pipiens* L.)
Dublin: adults on ceiling in house.

Golden spider beetle (*Niptus hololeucus*(Faldermann))
Dublin: in house with *Ptinus tectus* and *Trigonogenius globulus*.

Greenbottle (*Lucilia* spp.)
Dublin: larvae found in brussel sprouts after cooking.

Hawthorn shieldbug (*Acanthosoma haemorrhoidale*(L.))
Dublin: specimen terrified occupants of company premises.

House fly, lesser (*Fannia canicularis*(L.))
Dublin: empty pupal skins discovered in parcel containing shirt and robe. The clothes had been stored under damp conditions and subsequently wrapped in brown paper.

Leatherjacket (*Tipula* spp.)
Dublin: larvae crawling about on ground in large numbers, January.

Mealworm (*Tenebrio molitor* L.)
Dublin: larvae baked in bread.

Mediterranean flour moth (*Ephestia kuehniella* Zeller)
Dublin: adults reared from larvae infesting buckwheat purchased in shop, live larvae in oat flakes.
Louth: larvae in flaked oatmeal.
Sligo: larvae baked in slice of bread.
Wexford: larvae in ship's hold.

Merchant grain beetle (*Oryzaephilus mercator*(Fauvel))
Dublin: adult in bakery.

Milkbottle scuttle fly (*Spiniphora bergenstammi*(Mik))
Dublin: puparia found in milk bottles on two occasions.

Moth flies (Psychodidae)
Dublin: twice at drains of premises.

Non-biting midges (Chironomidae)
Cork: adults swarming on food premises.
Dublin: larval remains in tap water.

Pharaoh's ant (*Monomorium pharaonis*(L.))
No locality, infesting rural hospital.

Limerick: in canteen's water kettle (no further data).
Wexford: living around fire places of two semi-detached houses, alleged to be making holes in base of chimney wall.

Plaster beetles (Lathridiidae)
Dublin: numerous in damper area of kitchen extension, two other enquiries concerning houses (no further data).
Galway: in cupboard.

Psocids (Psocoptera)
Dublin: in a drawer, in rye flakes, in barley flakes, in oat flakes, in damp kitchen, in sugar, in package, in débris between floor-boards, several enquiries without data (all houses); numerous in warehouse near river, in files of office, in library, in empty ointment tubes belonging to industrial premises.
Galway: in house, in cork flooring of house, large numbers on wallpaper of ceiling of flats with a condensation problem.
Kerry: in books.
Kildare: in stored sugar, in house.
Wexford: in wooden shoe of Indian manufacture.

Rice weevil, lesser (*Sitophilus oryzae*(L.))
Dublin: adults under damp floor covering in house.

Rust-red flour beetle (*Tribolium castaneum*(Herbst))
Dublin: in rice store of hospital, in house (all adults).
Dundalk: in pollard pellets from Ghana (with *Tenebroides mauritanicus*)(adults).
Wexford: in dried milk (adults).

Saw-toothed grain beetle (*Oryzaephilus surinamensis*(L.))
Dublin: no further data (adult).

Sewage fly (*Leptocera caenosa* Rondani)
Dublin: numerous adults invaded hospital from outside drains (Nash and O'Connor, in prep.).

Silverfish (*Lepisma saccharina*(L.))
Dublin: in brief case; in baths, kitchen, bedrooms, quilt, bottle of tonic (all houses).

Soldier beetle, a (*Rhagonycha fulva*(Scopoli))
Dublin: adults in house.

Springtails (Collembola)
Donegal: in dwelling house.
Dublin: in bathroom, in débris, in damp kitchen (all houses).
Kildare: in pot plants in house.

St. Mark's fly (*Bibio marci*(L.))
Dublin: adults in house.

Strawberry seed beetle (*Harpalus rufipes*(Degeer))
Dublin: adult in house.
Limerick: adult in carton of milk.

Vapourer moth (*Orgyia antiqua*(L.))
Dublin: larvae on trees, larvae invading house from trees, adults in house.

Vine weevil (*Otiorhynchus sulcatus*(Fabricius))
Dublin: in articles in house, two further records of being in houses (all adults).

Warehouse moth (*Ephestia elutella*(Hubner))
Dublin: larva in shop, live larva on pizza pie, live larvae in chocolate goods, larvae in bars of chocolate containing nuts which some specimens were using as pupation sites.

Wasps (Vespidae)
Dublin: several enquiries concerning troublesome nests in gardens or in houses. The latter included such sites as atties or inside ventilation ducts; thorax found in sweet.

Wharf borer (*Narcedes melanura*(L.))
Dublin: adults infesting dwelling house in large numbers during June.
Wexford: adults infesting dwelling house in large numbers during June. They appear to have originated in nearby wooden quays.

White-marked spider beetle (*Ptinus fur*(L.))
Kildare: adults infesting inside of shaft of the primary wing feather of a hen pheasant used for fly-tying (house).

White-shouldered house moth (*Endrosis sarcitrella*(L.))
Dublin: larvae living in débris between floorboards, larvae in custard powder (houses).
Wexford: in caravan.

Woodboring weevil (*Pentarthrum huttoni* Wollaston)
Dublin: infesting floorboards of flats in large numbers, in house.

Woodboring weevil (*Euophryum rufum*(Broun))
Dublin: dead adult in container of sugar (O'Connor,1978).

Yellow underwing moth, large (*Noctua pronuba*(L.))
Dublin: eggs were found on "nappies" hung on outside clothes line. The mother was concerned that they might be parasites passed by her child. Caterpillars hatched in the museum.

Miscellanea
Dublin: live fly larvae found in mouth by female customer of public house after drinking pint of ale (badly damaged when received).

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I am indebted to those who brought such interesting material to my attention. In particular, I wish to thank the staff of the Eastern, North-Eastern, South-Eastern and Southern Health Boards, of the Food Bacteriology Department of Limerick Corporation and of the various sections of the Department of Agriculture for their diligence and enthusiasm. I am very grateful to Dr C.E.O'Riordan for his encouragement.

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Rapistrum rugosum(L.) ALL. IN IRELAND

Peter Wyse Jackson

R.rugosum(L.) All. is an annual yellow-flowered crucifer, native to the Mediterranean region and now widely naturalised in Central Europe, North and South America, South Africa, Australia and New Zealand. In Britain it is frequent as a casual and naturalised in some localities as a weed of arable and waste land (Clapham, *et alia*,1962). In Ireland there were few records of *R.rugosum* before 1970, all of them outside Dublin City. Since then , there have been over a dozen records, all of them in the Dublin region, where the plant seems to be well established and spreading.

Its habitat in Dublin is confined to recently disturbed waste ground and roadsides, where it is often accompanied by *Brassica nigra*(L.) Koch.. In some cases there are numerous plants in the population and seed production is high. The instability of its habitat in Dublin may result in populations disappearing from year to year but despite this there are still many apparently suitable potential habitats still to be colonised within the city.

It is notable that six records of this plant, the most recent records, have been recorded in close proximity to St. James's Gate, Guinness's Brewery. This suggests that seeds may be carried into Dublin with some raw-material used by that company. Although no imported barley has been used by the Brewery since the 1960s, hops are still imported from England and Europe. It is possible therefore that seeds of *Rapistrum rugosum* and *Brassica nigra* are being brought into Dublin in this way. As there is no other active grain importer in that area, the Brewery seems to be the most likely source.

Notable large populations were found near Christ Church Cathedral, Dublin, in 1980 and at Irishtown, Dublin, in 1981. A list of the records and specimens from Ireland that I have been able to find, is given below.

Variation in *R.rugosum*

There is a large amount of variation in Irish plants of *R.rugosum*, especially with regard to seed capsule size and shape. No clear

patterns of variation can be discerned and it is very difficult to refer them to any subspecies noted in Flora Europaea. Some are intermediate between *subsp. rugosum* and *subsp. orientale*(L.) Arcangeli and others can be tentatively referred to *subsp. rugosum*. However further work when more specimens are found may give a clearer picture. A key based on Flora Europaea to the three European subspecies is given below.

Description

An annual (or rarely biennial) plant with a simple or branched stem, 15-60 cm, stiffly hairy below. The basal and lower cauline leaves are stalked, pinnately lobed and coarsely toothed, with a large terminal lobe and generally smaller lateral lobes. The upper cauline leaves are less deeply lobed and coarsely toothed, with a large terminal lobe and generally smaller lateral lobes. The upper cauline leaves are less deeply lobed or are merely toothed and are narrowed into a stalk-like base. The flowers are about 1 cm in diameter and lemon-yellow in colour. The upper segment is ovoid or globose and is strongly ribbed and rugose and the lower is cylindrical and much smaller. The upper segment is one seeded (at least, in Irish specimens seen) and the lower, one seeded or none. There is a short style which is persistent in fruit.

Rapistrum rugosum Records:

1. Enniscorthy, Co.Wexford. 14 August 1898. DBN.
2. Near Sydenham Station, Co.Down. C.D.Chase. *Ir.Nat.J.*,3,21,1980. Also specimen BEL and DBN.
3. Wasteground Sydney Parade, Dublin. Dr Bewley. 12 June 1935. DBN.
4. Killiney Strand near mouth of Shanganagh River, Co.Dublin. C.Pearson. 27 July 1948. TCD.
5. Roadside near Stepaside, Dublin. O 195250. 1972. P.H.Carvill. *Bull.Ir.biogeog.Soc.*4.,24.
6. Sea-wall near the Childrens' traffic school at Clontarf. O 200236. 1973. P.H.Carvill. *Bull.Ir.biogeog.Soc.*4.,24.
7. By Milltown Bridge, Dublin.(several plants.) 175300. 1975-78. P.H.Carvill. *Bull.Ir.biogeog.Soc.*4.,24.
8. Between Chapelizod Bridge and the Chapelizod Gate of Phoenix Park, Dublin, 1976. Declan Doogue. (pers.comm.).

10. Enfield, Meath, on the Galway Road. On waste ground left after road widening. 1978. Declan Doogue. (pers.comm.).
11. Several plants with *Brassica nigra*(L.) Koch., by Pigeon House road, Irishtown, Dublin. O 185330. 1977. P.H.Carvill. *Bull.Ir. biogeog.Soc.*4.,24.
12. Ringsend Rubbish Dump, Dublin. October 1978. P.Wyse Jackson, T.G.F.Curtis and M.Sheehy Skeffington. *Herb.Ir.biogeog.Soc.*
13. Chapelizod, Co.Dublin. 27 July 1979. Dr Alfred Neumann. DNB.
14. Waste ground near Christ Church Cathedral, Dublin. July 1980. P.Wyse Jackson and M.Sheehy Skeffington. *Herb.*Dublin Naturalists' Field Club (DNFC). Still there August 1981. With *Brassica nigra.*
15. Waste ground beside City Quay on the Liffey, Dublin. 17 August 1981. P.Wyse Jackson. *Herb.*DNFC.
16. Waste ground off Clanbrassil Street, Dublin. 9 August 1981. P.Wyse Jackson. *Herb.*DNFC.
17. Sir John Rogerson's Quay on the Liffey, Dublin. 9 August 1981. P.Wyse Jackson. *Herb.*DNFC.
18. Pembroke Street, Irishtown, Dublin. Numerous plants with *Brassica nigra.* 26 August 1981. P.Wyse Jackson. *Herb.*DNFC.
19. Wolfe Tone Quay on the Liffey, Dublin. September 1981. Growing in a crack on the Liffey wall. P.Wyse Jackson. *Herb.*DNFC.
20. Filled in Grand Canal Harbour, near St. James's Gate, Dublin. With *Brassica nigra.* September 1981. P.Wyse Jackson. *Herb.*DNFC.

Key to Subspecies of *R.rugosum*:
(after Flora Europaea)

1. Pedicels 2-4 times as long as the lower segment of the fruit; upper segment only slightly ribbed and rugose.
(*subsp. linnaeanum* Rouy & Fouc.)

1. Pedicels 1-3 times as long as the lower segment of the fruit; upper segment strongly ribbed and rugose.
   2. Pedicels 1-1½ times as long as the lower segment; upper segment ovoid.
(*subsp. rugosum*)

   2. Pedicels 1½-3 times as long as the lower segment; upper segment globose.
(*subsp. orientale*)

Clapham, *et alia*(1962) note also that in *subsp. orientale* the lower capsule segment is seedless, and in *subsp. rugosum* is one-seeded.

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FURTHER CRUSTACEAN RECORDS FROM LOUGH INE, CO.CORK

J.M.C.Holmes

Lough Ine (W 0928) is a sea lough in West Cork. The author has been working on the fauna of the lough each summer for the past five years. A certain amount of material has been collected and deposited in the National Museum and a preliminary list of the Crustacean species has already appeared (Holmes,1980). Since then a number of additional interesting species have been collected. These are listed below.

A variety of habitats have been investigated, by general shore collecting, plankton towing, washing sublittoral weed, and in particular, a careful examination of the north west corner of the lough where a small freshwater stream flows in. In addition, in July 1981, a series of collections were made in various parts of the lough using an underwater light trap. This proved quite successful and revealed a number of species not collected by other methods.

Lough Ine (or L.Hyne) is a particularly suitable place for marine biology and it is most heartening that it has recently been made a Nature Reserve. Much has already been published on the physical aspects and biology (Bassindale, *et al.*,1948; Thain, *et al.*,1981) and there appears to be an increasing level of interest in the lough by biologists.

Species list

Order MYODOCOPA

Euphilomedes interpuncta(Baird): In light traps, July 1981.
Asteropina mariae(Baird): In light trap, July 1981.

Order PODOCOPA

Hemicythere convexa(Baird): Common amongst sublittoral weed.
Hemicythere villosa(G.O.Sars): In littoral zone, October 1979.
Loxoconcha impressa(Baird): Common amongst sublittoral weed.
Xestoleberis labiata Brady & Robertson: Common amongst sublittoral weed.

Order CALANOIDA

Metridia longa(Lubbock): One specimen taken in night plankton tow, August 1979.

Acartia discaudata(Giesbrecht): In light traps, July 1981.
Parapontella brevicornis(Lubbock): In light traps, July 1981.
Pseudocalanus elongatus Boeck: Occasionally taken in the plankton, 1980.
Stephos scotti G.O.Sars: One specimen in light trap, July 1981.
Paracalanus parvus(Claus): In plankton in the North Basin, July 1980.
Pseudocyclops obtusatus Brady & Robertson: One specimen taken in night plankton tow, July 1980.

Order HARPACTICOIDA

Longipedia minor T.& A.Scott: In night plankton tow, July 1980.
Longipedia scotti G.O.Sars: In night plankton tows, July 1980.
Tigriopus brevicornis O.F.Müller: In rock pools in Barloge Creek.
Sacodiscus fasciatus(Norman): Found in the rapids area, October 1979.
Laophontodes bicornis A.Scott: Amongst sublittoral weed above the rapids.
Laophonte cornuta Philippi: In night plankton tows, July 1980.
Amonardia normani(Brady): Amongst sublittoral weed.
Amphiascopsis cinctus(Claus): In night plankton tows, July 1980.
Diarthrodes assimilis(G.O.Sars): Amongst sublittoral weed above the rapids.
Phyllothalestris mysis(Claus): Amongst sublittoral weed.
Rhynchothalestris rufocincta(Brady): Amongst sublittoral weed.

Order CYCLOPOIDA

Oithona nana Giesbrecht: Very abundant in the plankton, July 1980 and 1981.
(Holmes(1980) stated that *Oithona helgolandica* Claus (= *O.similis* Claus) was abundant in the plankton. However, on re-examination, these specimens were found to be *O.nana*. Nevertheless, *O.helgolandica* was also taken in L.Ine.).
Cyclopinodes elegans(T.Scott): In light traps, July 1981.
Euryte longicauda Philippi: In the littoral zone, October 1979.

Order POECILOSTOMATOIDA

Paranthessius anemoniae Claus: Found in association with the Anemone *Anemonia viridis*(Forskål).
Doridicola agilis Leydig: Found in association with the Nudibranch *Archidoris pseudoargus*(Rapp).

Zygomolgus tenuifurcatus(G.O.Sars): Amongst sublittoral weed above the rapids.

Pseudanthessius gracilis Claus: In sublittoral weed above the rapids.

Pseudanthessius liber(Brady): In washings from *Echinus esculentus* L. near the rapids.

Acanthochondria cornuta(O.F.Müller): On the gills of Flounder, *Platichthys flesus*(L.).

Order SIPHONOSTOMATOIDA

Asterocheres latus(Brady): In plankton tows, July 1980.

Asterocheres simulans(T.Scott): One specimen in a sponge, October 1979.

Dermatomyzon nigripes(Brady & Robertson): One specimen found in sublittoral weed above the rapids, July 1980.

Acontiophorus scutatus(Brady & Robertson): In sublittoral weed above the rapids, July 1980.

Order CUMACEA

Bodotria scorpioides(Montagu): In night plankton tow, July 1980.

Pseudocuma longicornis(Bate): In night plankton tow, July 1980.

Order TANAIDACEA

Apseudes talpa(Montagu): In sublittoral gravel in Barloge Creek, August 1981.

Leptochelia savignyi(Krøyer): Amongst sublittoral weed.

Pseudoparatanais batei(G.O.Sars): In sublittoral weed above the rapids.

Tanais dulongii(Audouin): In cavities in turf banks in the Goleen and on Castle Island.

Order ISOPODA

Gnathia vorax(Lucas): Locally abundant on dead scallop shells on muddy bottoms.

(The earlier record (Holmes,1980) of *Gnathia maxillaris*(Montagu) is now considered to be an error. The single specimen then found was a somewhat deformed *G.vorax*).

Paragnathia formica(Hesse): In cavities in turf banks in the Goleen.

Jaera forsmani Bocquet: In the rapids area.

Jaera praehirsuta Forsman: On the shore where there is a freshwater influence.

Oniscus asellus L.: Under stones on the upper shore.

Order AMPHIPODA

Normanion quadrimanus(Bate & Westwood): One specimen in light trap, July 1981.

Socarnes erythrophthalmus Robertson: In light traps above the rapids, July 1981.

Tryphosella sarsi Bonnier: Amongst sublittoral weed above the rapids.

Ampelisca diadema(Costa): In light traps above the rapids, July 1981.

Ampelisca typica(Bate): In light trap above the rapids,July 1981.

Amphilochus neapolitanus Della Valle: Amongst sublittoral weed in Barloge Creek, August 1981.

Stenothoe marina(Bate): Abundant amongst fouling weed on a boat in the North Basin, July 1981.

Hyale perieri(Lucas): In rock pools on the exposed open shore at Carrigathorna, July 1980.

Hyale stebbingi Chevreux: Amongst weed in the rapids area.

Ceradocus semiserratus(Bate): In sublittoral gravel in Barloge Creek, August 1981.

Melita pellucida G.O.Sars: On the shore where there is a freshwater influence.

Urothoe elegans(Bate): In light traps above the rapids, July 1981.

Metaphoxus fultoni(T.Scott): Commonly found in light traps, July 1981.

Atylus falcatus Metzger: One specimen taken in plankton tow, August 1979.

Leptochirus tricristatus(Chevreux): In sublittoral gravel in Barloge Creek, August 1981.

Gammaropsis lobata(Chevreux): One specimen found in sublittoral gravel in Barloge Creek, August 1981.

Megamphopus cornutus Norman: One specimen taken in night plankton tow, August 1979.

Chelura terebrans Philippi: In driftwood in the North Basin.

Jassa marmorata Holmes: Abundant in fouling weed on a boat in the North Basin, July 1981.

Hyperia galba(Montagu): Numerous specimens in Jellyfish *Aurelia aurita*(L.), July 1980.

Order MYSIDACEA

Siriella armata(Milne-Edwards): In light traps above the rapids, July 1981.

Siriella jaltensis Czerniavsky: In night plankton tow, July 1980.
Leptomysis lingvura(G.O.Sars): In light traps, July 1981.
Schistomysis spiritus(Norman): In light traps above the rapids, July 1981.
Praunus inermis(Rathke): In light traps, July 1981.
Mesopodopsis slabberi(van Beneden): In light traps, July 1981.
Heteromysis formosa S.I.Smith: One specimen found amongst dead scallop shells, August 1980.

Order DECAPODA

Galathea intermedia Liljeborg: Specimens found amongst dead scallop shells, August 1980.
Pagurus prideauxi(Leach): One specimen found in the South Basin, July 1980.
Anapagurus hyndmanni(Bell): Amongst sublittoral weed above the rapids, July 1980.
Eurynome spinosa Hailstone: Amongst sublittoral weed above the rapids.
Inachus dorsettensis(Pennant): Specimens found in the South Basin, July 1980.
Inachus phalangium(Fabricius): Amongst sublittoral weed above the rapids.

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A NEW STATION FOR *Mercurialis perennis* L. IN CO. CLARE

J.R.Akeroyd & J.A.N.Parnell

The debate as to the native status of *Mercurialis perennis* L. in the Burren region is alive and well, though not perhaps raging. Boatman (1966), Webb(1978) and Curtis(1981) are of the opinion that *M.perennis* may be native in the Burren, whilst Lambe, *et al.*(1978) hold the antithetic view. We do not wish to enter this debate but to report a significant extension of the known range of the species in Co.Clare.

On 19 June 1981 a field course from Trinity College visited a small limestone outcrop situated approximately 3 km north-west of Ennis, Co.Clare, just south of the T70 road (R 3079). The outcrop is partly wooded, the woodland dominated by an upper storey of *Fraxinus excelsior* and an understorey of *Corylus avellana*. Phytosociologically the woodland falls into the Corylo-Fraxinetum association of Kelly & Kirby(1982).

One of our party (J.Lord) discovered two colonies of *M.perennis*, about 20 m apart, on the eastern edge of the woodland. Though both colonies were small, they were vigorous and female plants were bearing fruit. A list was made of the associated species - see Table 1. The community was dominated by *M.perennis* and *F.excelsior* and, as can be seen in Table 1, consisted solely of native species. The assemblage of species would seem to be as natural as that described by Curtis (1981) from south of Corofin (R 286875). The nearest human influence is a quarry, 1.5 km away.

This is the first record, as far as we are aware, of *M.perennis* from the area lying between the southern border of the Burren and the Shannon estuary in the eighty years since Praeger(1901: 278) reported the species from "Ennis(very rare)". A herbarium specimen has been lodged at the Trinity College herbarium (TCD).

Acknowledgements

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Table 1 : Species associated with *Mercurialis perennis* at the Ennis locality *

Woody species	Herbs
Crataegus monogyna	*Anemone nemorosa*
Fraxinus excelsior (seedlings)	*Asplenium adiantum-nigrum*
Hedera helix	*Brachypodium sylvaticum*
Rubus fruticosus agg.	*Bromus ramosus*
	Ceterach officinarum
	Epilobium montanum
	Fragaria vesca
	Hypericum androsaemum
	Hypochoeris radicata
Mosses	*Melica uniflora*
	Polypodium
Pleurozium schreberi	*Pteridium aquilinum*
Thamnium alopecurum	*Sesleria caerulea*

* Nomenclature follows Scannell & Synnott(1972) for flowering plants and Smith(1978) for mosses.

AN ABNORMAL PLANT OF *Digitalis purpurea* L.

John Parnell

A large number of floral abnormalities have been reported in *Digitalis purpurea* L. Masters(1869) gives fourteen different examples. However, recently, I found a new and previously unrecorded abnormality.

The abnormal plant, which was highly distinctive, was the only one of its type in a large woodland population of *D.purpurea* growing near Peterhead in North East Scotland, NJ 979477. The population was polymorphic for flower colour and the abnormal plant was white flowered. The following description highlights differences of the teratological plant from normal *D.purpurea* described by Clapham, Tutin & Warburg(1962).

The racemose inflorescence of the teratological plant was abnormally lax and few flowered. All flowers in the raceme were of normal size but were erect instead of drooping. The corollas of the flowers were usually partly, or more rarely completely, dialysed, *i.e.* split into separate organs. Nearly all partly dialysed flowers had the upper corolla lobe completely free and rolled or bent back towards its base, *i.e.* towards the peduncle. In fully dialysed flowers all the petals and stamens were completely rolled back towards their bases, exposing the upper surface of the ovary. All the flowers were virescent either along the length of the individual petal edges and/or along the lines of fusion of the corolla. Other floral organs and morphological features of the plant were normal, though pedicel length was very variable and often exceeded 5 centimetres.

Seed was collected from this plant and grown up in garden conditions. Progeny of these seeds did not bear abnormal flowers. Further observation of the population over the next two years failed to reveal any more such abnormal plants.

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THE IRISH PTYCHOPTERIDAE (DIPTERA)

Martin D.C.Speight & James P.O'Connor

Introduction

So far as we can ascertain, the only published references to the occurrence in Ireland of members of this small fly family are found in Haliday(1833) - who lists four species (*Ptychoptera albimana*, *P. lacustris*, *P.paludosa* and *P.scutellaris*) from Co.Down - and Walker (1856). Wagner(1978) evidently overlooked or discarded these early references, in his table showing European distribution of *Ptychoptera* species, Ireland is represented by a column of blanks, suggesting none of the species occur here. Stubbs(1972a) mentions the existence of some Irish *Ptychoptera* records, but points out that no specimens were available to him for examination, so that Ireland was excluded from consideration in his review.

The present text seeks to list the Ptychopterids recorded in Ireland to date and to provide a summary of the associated distribution information. Brief notes on habitat and identification of the adult flies are also included. Nomenclature used here follows Kloet and Hincks(1976) and the determinations are based on Freeman(1950). The only records mentioned are based upon specimens collected in the present century and determined either by one of us, Peter Chandler or Alan Stubbs. Specimens of all the recorded species except *P. contaminata*, bearing our determination labels, are deposited in the collections of the National Museum, Dublin. In old collections and earlier literature *Ptychoptera* species not infrequently appear under the generic name *Liriope*, subsequently supressed by the International Commission for Zoological Nomenclature.

The *Ptychoptera* species known in Ireland

albimana(Fab.) - G
contaminata(L.)
lacustris Mg. - L
minuta Tonn.*
paludosa Mg. - L
scutellaris Mg.

G = probably generally distributed; L = local; * = species previously unrecorded from Ireland.

According to Wagner(*loc.cit.*), 13 species of *Ptychoptera* occur in

Europe. Of these, 4 are regarded as endemic to parts of Europe far removed from Ireland, *P.hugoi* Tjed. and *P.silvicola* Zwyrt.& Rozk. are more generally distributed but unknown in Great Britain or Ireland, and *P.longicauda* is known from a handful of localities in England but not from Ireland. All the Irish species have been recorded from Great Britain. All of the known British *Ptychoptera* species are keyed out by Freeman(1950). Of the additional, more generally distributed continental species, *P.hugoi* may be determined by Tjeder (1968) and *P.silvicola* by using Zwyrtek & Rozkosny(1967). The larvae of all the known Irish species can be distinguished with the help of Brindle(1962, 1966). Ptychopterids can quite properly be regarded as wetland organisms. Their larvae are sub-aquatic and believed to feed on decaying vegetable matter. They breathe atmospheric oxygen through a retractile respiratory tube and are thus able to inhabit largely anaerobic media like wet mud and the stagnant water of field drains. The adults are rarely met with more than a few yards from the appropriate larval habitat. In general appearance they resemble crane-flies (Tipulidae) but most *Ptychoptera* species can normally be recognised in the field by their dappled wings and more defined colouration - they are either shining black and yellow, or shining black. Ptychopterids also fly in the open, in the sun - usually close to the ground - a habit unusual among Tipulidae.

Distribution records and notes on the species

The available distribution information is summarised in the maps provided in fig. 1. In the more detailed records given under each species 10 km Irish grid references are followed, in brackets, by 50 km UTM grid references, using the grid-square notation adopted internationally for purposes of the European Invertebrate Survey (see Heath,1971). Where it has not proved possible to give Irish grid references, due to imprecise locality data provided by collectors, only UTM references are given. This is, as far as we know, the first time that Irish distribution records for any group of animals have been given using the UTM grid.

P.albimana(Fab.)

Antrim: 19 May 75, 21 August 78, Masserene, J 1485 (PA.3), shore of Lough Neagh, AI; 16 May 75, 12 July 71, Barnett's Park,

Belfast, J 3268 (UF.2), AI, RN.
Carlow: 24 July 75, Graignealug, S 766715 (PU.1), AES.
Clare: 25 May 74, Fermoyle, M 10 (MU.3), KS; 19 May 70, Lahinch (MU.3), wooden glen below Moy House, PJC; 19 May 70, Ballynalackan Castle (MU.3), wood by castle, PJC; 20 May 70, Lough Inchiquin (MU.3), damp wooden track on hillside above, PJC; 22 May 70, Lisdoonvarna (MU.3), alderwood, PJC.
Cork: 31 May 74, North Ring, W 44 (NT.2), KS.
Donegal: 30 May 75, C 0834 (NB.4), mixed woods, MS.
Down: 19 August 74, Comber, J 4767 (UF.2), AI; Murlough NR, Dundrum, J 43 (UF.2), RN; 26 May 71, Dromore, J 25 (PA.4), RN; 19 May 75, Ballygowan, J 4163 (UF.2), stream in wood, AI.
Dublin: ♂♂ 11 August 79, O 2221 (PV.4), pond-side, poorly-drained pasture, MS; ♂ 1909, Howth (PV.4), JNH, NMI.
Kildare: 21 June 78, N 7715 (PU.1), fen meadow, MS.
Laois: ♂♂ 5 September 79, S 3380 (NU.3), fen carr, MS.
Mayo: ♀ July 10, Belclare (MV.4), G, NMI; ♀ Clare Is. (MV.1), G, NMI; 29 September 77, Westport (Demesne), L 98 (MV.3), PJC.
Meath: 29 July 74, N 9757 (PV.4), by ditch, arable field, MS.
Monaghan: 20 May 76, Carrickmacross, H 80 (PV.1), marshy lake shore, JHC.
Wexford: ♂ 12 July 78, S 7817 (PT.1), poor fen, MS; ♂ 27 June 78, T 0723 (PU.4), field ditch, MS; ♀ 5 September 80, T 105098 (PT.1), JOC, NMI; ♂♂♀ 17 August 80, T 121039 (PT.3), JOC, NMI; 15 July 75, nr.Newbawn, S 856244 (PU.4), riverside, AES.
Wicklow: 26 April 75, O 2117 (PU.3), by stream, deciduous woods, MS; 27 April 79, O 1627 (PV.4), deciduous woods, MS; 6 May 80, T 2979 (PU.3), MS; 30 July 80, O 2513 (PU.1), swampy pasture, MS; ♀ 30 September 09, L.Dan (PU.3), NMI.

P.albimana is the most widely distributed and most frequent *Ptychoptera* species both in Ireland and Great Britain. Since it is, more than other ptychopterids, a fly of wet field ditches and poorly drained pastures, its wide distribution is perhaps not surprising. In both sexes it can be identified with confidence using Freeman(1950).

P.contaminata(L.)
Clare: 24 April 74, Corofin, R 2689 (MU.3), RN (det. AS).

We have been unable to trace any Irish specimens of this species; the Clare record is accepted on the authority of Alan Stubbs (see below).

There is an early reference suggesting *P.contaminata* had been found in Ireland in Walker(1856), who says that Haliday had Irish material belonging to this species. However, Haliday's manuscript list of Irish Diptera (now housed in the National Museum of Ireland) makes no reference to *P.contaminata*. Halbert also compiled a manuscript list of Irish Diptera. His text (also in NMI) refers to Walker's mention of Irish *P.contaminata* in Haliday's collection, but comments on the unreliability of Walker's paper, pointing out that Walker erroneously included some species as Irish supposedly on Haliday's authority and ignored other definitely Irish species recorded by Haliday. There is a Haliday specimen of a female *Ptychoptera* in NMI labelled "Ireland" and named (by Halbert?) as *P.contaminata*. But this specimen probably belongs to *P.lacustris* (see note on *P.lacustris*) and certainly is not *P.contaminata*. There are no Irish specimens of *P.contaminata* in the collections of the British Museum(Natural History)(A.Hutson, *pers.comm.*).

If *P.contaminata* were absent from Ireland, this would be a feature of some minor biogeographic interest, since the species is widespread in Great Britain as far North as the English Lake District (Stubbs, 1972b). Hopefully, by the time more comprehensive distribution information is available for Irish *Ptychoptera* species in general - the "all records" map in fig. 1 gives some indication of the localisation of collecting effort to date - more Irish material of *P.contaminata* will have turned up. The Clare record for *P.contaminata* given above is based upon information kindly supplied by Alan Stubbs. As part of a comprehensive distribution mapping scheme for nematocerous Diptera organised through the Biological Records Centre at Monks Wood, Alan Stubbs determined *Ptychoptera* specimens sent to him from all parts of Ireland and Great Britain. Among material sent by Robert Nash was evidently a specimen of *P.contaminata*, as above. But because the "doubtful" status of the species on the Irish list was not at the time recognised the specimen was not retained - a reasonable course of action since the "common" status of *P.*

contaminata in Great Britain would lead one to assume that in Ireland the species might also be encountered frequently.

Whatever the shortcomings of Freeman(1950), *P.contaminata* is by no means difficult to identify using it and future Irish specimens should be recognised by Irish workers. According to Stubbs(1972a), *P.contaminata* is associated with large or fairly stable bodies of water such as ponds, more especially lakes, canals and sluggish rivers.

P.lacustris Mg.

Antrim: 14 May 72, Belfast, J 307674 (UF.1), RN.

Carlow: 24 July 75, Graignealug, S 766715 (PU.1), ditch under sallows, AES.

Dublin: ♂ 6 June 34, Slade of Saggart (PV.4), AWS, NMI.

Kildare: ♀ 20 June 78, N 7715 (PU.1), fen, MW.

Mayo: ♀ July 10, Belclare (MV.4), G, NMI.

Wexford: 14 July 75, Orristown, T 0413 (PT.3), shaded ditch, AES; 15 July 75, near Newbawn, S 856244 (PU.4), AES.

Wicklow: ♀♀ 14 June 75, O 2215 (PU.3), by stream, deciduous woods, MS; ♂ 11 August 78, O 2117 (PU.3), by stream, deciduous woods, MS; ♂♀♀ 6 May 80, O 2611 (PU.3), oak woods along stream, MS; ♀ 16 June 78, O 2606 (PU.3), mixed woods along stream, MS; ♂ June 03, Bray (PU.3), JNH, NMI.

Determination of *P.lacustris* is to some extent problematic, in that although males can be easily recognised from the morphology of their genitalia, the females cannot be segregated from those of *P.longicauda* using available keys; hence the doubt as to the identity of the Haliday specimen mentioned under *P.contaminata*. Admittedly, *P. longicauda* is not at present known from Ireland, so the possibility that its females may be confused with those of *P.lacustris* might be regarded as a rather academic point. But *P.longicauda*, whose larvae inhabit the muddy edges of streams in deciduous woodland (Stubbs, 1972a), could yet be found in Ireland and would tend to occur in the same locations as *P.lacustris*. Females of *P.lacustris* are also rather similar to those of *P.albimana*, but do not have the whitish meta-basitarsi normally exhibited by the latter species, and at the wing-base possess a dark spot which is normally absent in *P.albimana*.

Irish records of *P.lacustris* males are few, but if it can be assumed that Irish records based only on females do refer to this species then, as it does in Great Britain (Stubbs,1972a), it shows a clear preference for stream-side habitats in deciduous woods.

P.minuta Tonn.

Antrim: 19 May 75, 30 June 75, Masserene, J 18 (PA.3), shore of Lough Neagh, AI.

Carlow: ♂♂♀ 5 May 76, S 7380 (PU.1),pond-side *Phragmites* bed, edge of pasture, MS, NMI.

Dublin: ♂ 10 August 81, O 1627 (PV.4), Malaise trap, garden, MS.

Galway: ♂ 19 August 80, M 4214 (NU.1), marsh fringing small limestone lake, MS.

Laois: ♂♂ 5 September 79, S 3380 (NU.3), fen carr fringing small lake, MS.

Limerick: ♂♂ 7 July 81, R 6441 (NU.2), in vegetation beside lake, JOC, NMI.

Monaghan: 20 May 76, Carrickmacross, H 80 (PV.1), marshy lake shore, JHC.

Wicklow: ♂ 9 August 80, O 2207 (PU.3), cut-over regenerating bog at 700 ft, MS.

It is perhaps surprising that this species has not previously been recorded from Ireland. The males may be identified with relative ease using Freeman(1950), once it is realised that his figures of the genitalia do not differentiate between heavily and lightly sclerotised plates - the distal parts of the styli are largely unsclerotised in *P.minuta*. The females cannot be distinguished from those of *P.paludosa*.

P.minuta would appear to inhabit more strictly fen or bog locations than do the other *Ptychoptera* species, and also to tolerate harsher climatic conditions.

P.paludosa Mg.

Kildare: ♂ 13 July 79, N 7715 (PU.1), wet ditch along edge of fen, MS.

Mayo: ♂ June 09, Westport (MV.4), G, NMI.

Of the *Ptychoptera* species found in Ireland, this would seem to be

the most restricted in its range. There is a wide scattering of records from Great Britain, but the species is evidently very local where it occurs - see Stubbs(1972a, 1972b). Only the male can be recognised with certainty, from genitalic features.

Ptychoptera species are generally regarded as divoltine, the adults appearing in Spring and late Summer/Autumn, but it is possible that *P.paludosa* is univoltine at this end of its range in Europe. If this were the case, the resulting shorter flight season would contribute significantly to the species' apparent rarity.

P.scutellaris Mg.

Antrim: 19 May 75, Masserene, J 1485 (PA.3), swamp by Lough Neagh, AI.

Carlow: ♂ 5 May 76, S 7380 (PU.1), *Phragmites* fringing pond, MS; 24 July 75, Graignealug, S 766715 (PU.1), ditch under sallows, AES.

Galway: ♂ 19 August 80, M 4214 (NU.1), marsh fringing small lake, MS.

Mayo: ♂ 9 June 09, Clare Is. (MV.1), G, NMI.

Tipperary: 15 July 75, NW of Caher, S 030275 (NU.4), Marsh, AES.

Wicklow: ♂ August 19, Vale of Clara (PU.3), NMI.

This is another seemingly scarce species only identifiable in the male sex. It is tempting to deduce that its occurrence on two occasions with another uncommon *Ptychoptera*, *P.minuta*, suggests that these two species have similar habitat preferences. According to Stubbs(1972a), *P.scutellaris* occurs in Great Britain in both moorland bog and fen woodland biotopes, a rather unlikely ecological range which, as he points out, might lead one to suppose that two "forms" of the species exist. If so, only the moorland bog form has as yet been collected in Ireland, judging from the general character of the localities where it occurs here.

Abbreviations used in records

Collectors: AI= A.Irwin; AS= A.E.Stubbs; AWS= A.W.Stelfox; G= P. Grimshaw; JHC= J.H.Cole; JNH= J.N.Halbert; JOC= J.P.O'Connor; KS= K.Side; MS= M.C.D.Speight; MW= M.de Courcy Williams; PJC= P.J. Chandler; RN= R.Nash.

NMI= specimen in the collections of the National Museum of Ireland.

Acknowledgements

The records made available to us by Peter Chandler (Weston Research Laboratories, Berks.), Robert Nash (Ulster Museum, Belfast) and Alan Stubbs (Nature Conservancy Council, London) have made a considerable contribution to the volume of information at our disposal in the preparation of this article. In the not-too-distant future the records supplied by Alan Stubbs are due to be published in map form by the Monks Wood Biological Records Centre (Huntingdon, England), together with available records from Great Britain and the additional Irish records incorporated into this text. Both Peter Chandler and Alan Stubbs were kind enough to peruse and comment on the first draft of this manuscript. We are very grateful to those mentioned above for their generous help and to Tony Hutson (British Museum (Natural History)) for checking the museum's collections for Irish material of *P.contaminata*. J.P.O'Connor also wishes to thank A.B. Ó Ríordáin and C.E.O'Riordan for their assistance and encouragement.

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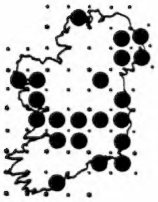
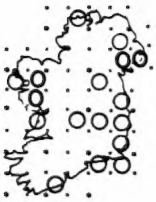
Fig.1: Maps showing distribution of records of Irish Ptychoptera species, plotted on 50km square base using UTM grid.

These maps show the present state of our knowledge: the "All records" map demonstrates how few grid squares carry records of any Ptychoptera species, a situation which could well change dramatically with more extensive and determined collecting. In the *P.lacustris* map, large asterisks denote records based only on females (see text) or on specimens of unknown sex.



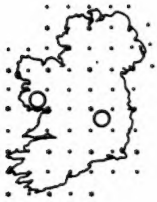
All records



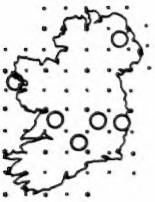
albimana

lacustris

minuta



paludosa



scutellaris

contaminata

THE FLORA OF THE MULLET PENINSULA, WEST MAYO (H 27)

T.G.F.Curtis, H.N.McGough and J.R.Akeroyd

Introduction

The remote area of north-west Mayo lying within the baronry of Erris has received little recent attention from floristic botanists. The first records made for the area were by Babington(1837), Moore(1852, 1860) and More, all of whom made cursury visits to the area and collected plant material from a few scattered localities. In 1904, R.L.Praeger, during a five day visit to the Mullet peninsula and the nearby islands of Inishkea, recorded 337 species from the Mullet. Since then, the only systematic botanical work in Erris has been that of Scannell and King(1960) who gave a full description of the rich flora of Bellacorrick bog. A visit by these workers to the area in 1957 had revealed the presence of the sub-arctic mosses *Meesia tristicha*(King,1958a) Bruch & Schimp (King,1958a) and *Camptothecium nitens*(Hedw.) Schp. and also *Saxifraga hirculus* (Scannell, 1958).

In late June, 1979, whilst engaged on individual research projects in west Mayo, we took the opportunity to record the flora of the Mullet peninsula, noting a number of new records for the area.

Physical features of the peninsula

The solid geology of the greater part of the Mullet consists of a complex of pre-Caledonian, metamorphic rocks (gneisses, quartzites and schists) which are among the oldest rocks in these islands, equivalent in age to those which form the Outer Hebrides (Whittow, 1975). Termon Hill, at the southern end of the peninsula, is a granite intrusion of late Caledonian age. For the most part, these strata are overlain by glacial drift, peat and wind-blown sand. The deposits of the latter are the most striking feature of the peninsula and occupy about 15% of its total area. These sands are rich in calcium carbonate, the content varying between 34% and 80% (Akeroyd and Curtis,1980; Whittow,*op.cit.*) which makes them comparable with the sands of the machair of the Outer Hebrides of western Scotland. This high calcium carbonate content has a profound influence on the flora and vegetation and on historical and contemporary land use.

The northern part of the peninsula, the coastal portions of which give way to precipitous sea-cliffs, is dominated by blanket bog, much of which is cut for fuel. A large part of the central and southern region is occupied by machair (dune pasture) and its associated habitat types. These include lakes and marshes. Cultivated land is restricted to the eastern, sheltered side of the peninsula whilst extensive peat cutting at its southern end has produced large areas of cut-away (bog bearing an impoverished heath community). Extensive grazing occurs throughout, but particularly on the dune pasture where the high stocking rate contributes to the development of a low, close sward. Overall, the area is strikingly similar to the Outer Hebrides not only in its geology and landforms, but also in the occurrence of similar plant communities, including those characteristic of the machair and in the land patterns and usage (Akeroyd and Curtis,*op. cit.*).

Annotated list of species

The following list is arranged in accordance with the order and nomenclature of *Flora Europaea*(Tutin, *et alia*,1964-1980). It consists mainly of new records for the peninsula, but includes notes on other species of interest, noted by Praeger and designated (P) after the species name. For the sake of completeness, all of the species recorded by us and not by Praeger have been included even though some of these were mapped in Perring and Walters(1976). These obviously lack details relating to their location on the peninsula and to distinguish these from our records we have prefixed new records by NR. An asterisk before the species name denotes that a plant is introduced. Herbarium material of most species has been lodged in TCD, DBN and in the herbarium of the Irish Biogeographical Society.

Botrychium lunaria(L.)Swartz.Roadside bank, south-east of Termoncarragh Lake, F 684345; at Drumreagh, east of Cross Lough, F 660284. First post-1930 record.

NR *Asplenium trichomanes* L. Wall at the cross-roads north-west of Belmullet, F 692338.

NR *A.adiantum-nigrum* L. Roadside bank, south of Termoncarragh Lake, F 670341.

Juniperus communis L. (P) Sea-stack at the Danish Cellar in the northern part of the peninsula, F 706401. Has apparently decreased since Praeger's time.

NR *Ranunculus bulbosus* L. Common throughout the machair: all material with patent hairs on stems and petioles - as elsewhere in Ireland.

NR *R.sceleratus* L. Brackish area north-west of the bridge at Belmullet, F 700325.

Arabis hirsuta(L.)Scop. Top of wall, 2 kms from the sea, F 668343. Also growing with *A.brownii* in dune grassland at Termoncarragh Lake.

NR *A.brownii* Jordan. Abundant on the machair at Annagh with the above, F 670335.

Cochlearia officinalis L. Common on sand hills immediately south of the road, east of Annagh, F 660339. An unusual habitat for this species which is more typically found on rocky and stony substrates.

Erophila spathulata Lang. Sand hills south-east of Annagh Head, F 660339.

Montia fontana L. (P) var.*variabilis* S.M.Walters. Channel beside the salt marsh west of Saleen harbour, F 666288.

Geranium pyrenaicum Burm *f*. Noted by Moore(1852) from Belmullet but not seen by Praeger. Roadside at Drumreagh, F 651275. First post-1930 record.

NR**Impatiens glandulifera* Royle. At An Geata Mór, F 675305. Probably a garden escape.

Vicia sepium var.*dunense* Druce. (P) Common on sand hills near Carn Prospect, F 676332. This prostrate variant, which lacks tendrils, has retained its distinctive growth habit after two years cultivation in Trinity College Botanic Garden.

Anthyllis vulneraria L. ssp *vulneraria*. Fixed dune grassland 0.5 kms from sea, south of Annagh Head, F 670310.

NR**Rosa rubiginosa* L. Roadside at An Geata Mór, with *Impatiens glandulifera*, F 675305.

Crataegus monogyna Jacq. Hedgerow south-east of Termoncarragh Lake, F 684345.

Saxifraga tridactylites L. On the machair south-east of Annagh Head, F 670335.

Parnassia palustris L. var.*condensata* Travis and Wheldon. This variety, with large flowers, is abundant in damp hollows and in the marsh surrounding Termoncarragh Lake, F 660342.

**Aegopodium podagraria* L. Roadside south of An Geata Mór, F 672300.

Solidago virgaurea L. var.*cambrica*(Huds.)Sm. Plants referrable to this variant were found on heathy slopes between the road and the sea, west of Termon Hill, F 690190.

**Chamomilla suaveolens*(Pursh)Rydb. Common around Belmullet and in disturbed ground near houses in many parts of the peninsula.

Senecio jacobea L. var.*floxulosus* DC. (P) This rayless variety is common on the sand hills and roadside banks, particularly south-west of Leam Lough, F 642267. The typical variety also occurs on the Mullet.

Jasione montana L. var.*major* Koch. Walls south of An Geata Mór, F 675300. This variety is distinguished by its robust habit and glabrous peduncles.

Empetrum nigrum L. (P) At sea level, south of the Tower, west of Termon Hill, F 605188.

Calystegia soldanella(L.)R.Br. Sand hills south-east of Annagh Head, F 660339. First recorded from west Mayo at Portmore Strand, 2 kms to the south (Breen,1975).

Convolvulus arvensis L. Roadside bank, south of An Geata Mór, F 688353.

Veronica serpyllifolia L. Bank at the margin of the bog south-east of Corclogh, F 688353.

NR *Euphrasia tetraquetra* Breb. Low, grassy cliff, south-west of the Tower, west of Termon Hill, F 606190.

NR *E.micrantha* Rchb. *det.*D.A.Webb. Marsh at the south-west end of Termoncarragh Lake, F 660342.

Rhinanthus minor L. ssp.*minor*. Common on sand hills and in meadows throughout the peninsula.

NR *Atriplex glabriuscula* Edmonston. Foredune, south-west of Leam Lough, F 630250. Recorded by Praeger(1905) from the islands of Inishkea.

Polygonum aviculare agg. (P) Material referrable to *P.aviculare* L. *sensu stricto* was found by the Tower west of Termon Hill, F 610196.

Rumex crispus L. (P) var.*littoreus* Hardy. Shore west of Belmullet,

F 699330. A common variant of this species found on seashores all around Ireland.

R.hibernicus Rech.*f*. Fixed and eroding dune grassland south of Annagh Head, F 670330. This is the *locus classicus* of this taxon, described from a collection made by M.Scannell (Rechinger,1961; type at DBN). Common and characteristic species of communities on substrates derived from wind-blown sand. *R.acetosa* is also frequent on the peninsula in pastures, meadows, roadsides and disturbed ground.

Alnus glutinosa(L.)Gaertner. Several trees at Seafield, west of Belmullet, F 695324.

Salix fragilis L. With *Alnus* at Seafield.

Dactylorhiza incarnata(L.)Soó. The following putative sub-species were noted:

ssp.*coccinea*(Pugsl.)Soó. Abundant in the machair south of Termoncarragh Lake, F 664342;

ssp.*pulchella*(Druce)Soó. A few plants with flower colours typical of this taxon - with the above.

D.maculata agg. The present day segregates of this group were not distinguished in Praeger's time. The following were noted:

D.fuchsii(Druce)Soó. Material from Corclogh, F 688353, from south of An Geata Mór, F 671292, and from south-east of Termoncarragh Lake, F 685344 - closely approaches ssp.*hebridensis* (Wilmott)Soó in being of small stature and having dark pink flowers with large labella. The Mullet populations are very close morphologically to populations from machair in the Outer Hebrides;

D.maculata ssp.*ericetorum*(E.F.Linton)P.F.Hunt and Summerhayes. Blanket bog south-east of Corclough, F 688353 and near the Danish Cellar, F 707392.

NR *D.majalis* agg.*D.majalis* ssp.*purpurella*(T.and T.A.Steph.)D.Moresby, Moore and Soó. A few plants at the edge of the bog at Corclough, F 688353.

NR *D.maculata* X *D.majalis* ssp.*purpurella*(*D.*X *Formosa*(T.and T.A.Steph.) Soó)). This hybrid was noted growing by the edge of the bog at Corclough, F 688353. Not noted from Ireland in Scannell and Synnott(1972).

NR *D.traunsteineri*(Sauter ex Rchb.)Soó. Marsh at the south-western end of Termoncarragh Lake, F 660342. The occurrence of this taxon, in so westerly a site, is of interest. It is found here in a dwarf form and closely approaches *D.majalis* ssp.*occidentalis* in morphology. Similar populations have been detected by T.G.F.C. from the machair marshes in the Outer Hebrides (Akeroyd and Curtis,1980).

NR**Platanthera bifolia*(L.)Rich. Abundant at edge of bog south-east of Corclough, F 688353.

**Tritonia* x *crocosmiflora*(Lamoine)Nicholson. Widespread in roadside ditches throughout the peninsula, probably escaping from cottage gardens.

Juncus bufonius L.*sensu stricto*. Tower, west of Termon Hill, F 610194.

Lemna minor L. Channel at Annagh, F 660338.

Carex demissa Tausch. Common on bog south-east of Corclough, F 688353 and on shores of Cross Lough, F 659285.

NR**C.lepidocarpa* Hornem. Marsh at the southern end of Termoncarragh Lake, F 660342.

NR *Alopecurus pratensis* L. Meadow north-west of Belmullet, F 698332.

A.geniculatus L. Dense stand on waste ground near the canal, Belmullet, F 702326. Not recorded by Perring and Walters(1976).

Koeleria micrantha(L.)Pers. Abundant throughout the machair at Annagh, south of Cross Lough and west of Ely harbour. Common machair species both in western Ireland and in the Hebrides (Akeroyd and Curtis,1980).

Aira caryophyllea L. Dry bank by strand at Seafield, F 686327. Robust plants with many culms and approaching ssp.*multiculmis* (Dum.)Bonnier and Layens. Although a chromosome count of 2n=28 from this population showed that it was tetraploid, it is very difficult to separate the typical sub-species which may be diploid or tetraploid from the tetraploid ssp.*multiculmis* in Ireland (D.G.Higgins, unpubl.).

NR *Deschampsia flexuosa*(L.)Trin. Heath on the edge of the cliffs at Danish Cellar, F 706401.

Catabrosa aquatica(L.)Beauv. ssp.*minor* F.H.Perring and P.D.Sell. Small stream at south-western end of Termoncarragh Lake,F 656337.

NR *Poa subcaerulea* Sm. Common on sand hills and roadside banks throughout the peninsula.

Discussion

The total number of species recorded from the Mullet peninsula now stands at 366, 29 of which have been added since Praeger's visit. However, 83 of his records have not been confirmed (or 77 if the microspecies of *Rubus* are excluded). The majority of these are rare and restricted to specialised habitats within the peninsula, though it seems that *Lobelia dortmanna* and *Eriocaulon aquaticum* have become extinct. These were recorded only from Ardmore Lough which was drained in the 1960s.

Over 25% of those species not re-found are weeds and ruderal species and it would appear that many of these have become extinct. Webb and Hodgson(1968) noted a similar decline in the numbers of weeds and ruderals when re-surveying the flora of the islands of Inishbofin and Inishark. Here a decrease in the area under tillage had taken place, consequently reducing the habitats available to those species. It is apparent from Praeger's description of the Mullet that the area there under tillage was much greater than it is today. Modern methods of seed clearing have had their effects on the weed and ruderal flora everywhere in Ireland and it seems probable that a combination of a decrease in land under cultivation and modern agricultural methods are responsible for the decrease in range, if not extinction, of weed species in the peninsula.

Several of the species that we did not record in 1979 are strand plants, plants which are known to be erratic in their appearances. However, *Arctostaphylos uva-ursi*, *Juniperus communis* and *Empetrum nigrum* have obviously decreased in range since Praeger's time as the first was not located and the other two species were found to be very local. No doubt extensive peat cutting and heavy grazing have contributed to their decrease.

The flora of the Mullet is extremely poor in comparison with the flora of the islands and peninsulas off the west coast of Ireland. Human activity is largely responsible for this situation but the major factor must be exposure to strong winds combined with a lack

of shelter. Nevertheless, the flora is of great interest, especially the relatively large numbers of coastal variants and infraspecific taxa and the floristic similarity to the machair flora of the Hebrides and the mainland of north-west Scotland.

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BOOK REVIEW

Sedges of the British Isles
B.S.B.I. Handbook No. 1
(2nd edition 1982 revised by: A.C.Jermy, A.O.Chater & R.W.David)
£6.50 Sterling, and available from B.S.B.I., c/o Dept. of Botany, Cromwell Road, London SW7.

It is now an incredible fifteen years since that excellent handbook, *British Sedges* (Jermy & Tutin,1968) was first published - a work that doubtless initiated many botanists into the intricacies of *Carex* identification, taxonomy and ecology. Not least did this apply to the reviewer, who, armed with his first copy in June 1973, identified *C.depauperata* as new to the Irish flora - an event guaranteed to give one a lifelong interest in this fascinating genus. As familiarity with the genus was gained firsthand, however, certain flaws in the handbook came to light. Therefore, the long-promised, revised second edition was awaited with considerable interest. While perhaps not as radically overhauled as some might have expected, this 1982 edition can be thoroughly recommended to all present and potential Caricologists. The following is a somewhat lengthy review, but considering the importance of this handbook, it will hopefully be seen as justified.

Apart from purely nomenclatural changes to bring the handbook into line with the *Carex* account in *Flora Europaea*, 5 (Chater,1980), the notes on ecology and classification have been slightly expanded, while all seventy-four native species and subspecies are now treated to a full-page description and illustrative plate (as, oddly enough, is a single putative hybrid, *C.* x *grahamii*). In addition, the following major changes have been made *viz*: new taxonomic accounts of both the *C.flava* and *C.muricata* groups; the inclusion of dot-distribution maps for all taxa; and, a restyling (and part rewriting) of both the fruiting key to *Carex* and the vegetative key to *Carex* and other similar *Cyperaceae*. Personally, I preferred the original key format and the separate fruit keys for both subgenera.

Illustrations and descriptions

As the majority of the illustrative plates and accompanying texts are taken from the first edition, it is regrettable that the opportunity was not availed of to correct certain errors in both, which would have made this handbook all the more useful. Nevertheless, the species descriptions are generally very adequate, while the illustrations are of a high artistic standard and aesthetically pleasing with the exception of *C.ornithopoda*, which is at too small a scale. However, the leaf ligule drawings in particular, call for some comment; many being mediocre and of too low a magnification (X3), while a few are wholly misleading. *C.remota* is a case in point, the drawing failing to show either the conspicuously tubular ligule (with its broad free flange) or the distinctive v-shaped apex to the hyaline inner face of the leaf sheath - vegetative characters which immediately separate it from the superficially similar *C.muricata* group.

The new plates, while adequate, are not as pleasing as the originals; perhaps the most successful is that of *C.muricata*, subsp.*muricata*, while that of *C.digitata*, in particular, is disappointing. Further, the illustrations fail to show the tubular leaf ligules of *C.flava* or *C.serotina*, though this character helps to separate *C.serotina* from dwarf plants of *C.extensa* with which it is rather frequently confounded.

Dot-distribution maps

These are a most welcome innovative feature and add a new dimension to the handbook, as an overall impression of species distribution patterns can now be gained at a glance - something the necessarily terse biogeographical notes cannot adequately convey. M.Scannell, Head of the Herbarium, National Botanic Gardens, Glasnevin, supplied much of the Irish data for the maps, based on DBN records and herbarium specimens and on her own extensive knowledge of Irish *Carices*. From an Irish standpoint, the maps illustrate strikingly the rarity of the following species south of the Irish midlands, *viz*: *C.strigosa*, *C.lasiocarpa*, *C.limosa*, *C.curta*, *C.acuta*, *C.aquatilis* and *C.diandra*. However, *C.lepidocarpa* and *C.serotina* are probably under-recorded in southern Ireland, while the very few post-1950 Irish

records for *C.pseudo-cyperus* may, or may not, be indicative of a major decline of this species here, due to drainage operations. The single dots for both *C.distans* and *C.extensa* to the north of Cork harbour (non-coastal squares) are erroneous. For this reviewer, the many blank Co.Cork squares for even common species are a personal mortification as, due to pressure of other work, the relevant data was not supplied in time for inclusion in the maps. As a consequence, such locally frequent/common species as *C.pilulifera*, *C.hirta*, *C. laevigata*,etc., appear to be absent from large sections of the county!

Carex flava group

It seems likely that the authors' new, ultra-conservative taxonomic account of this group as represented in the British Isles, will prove controversial, as only four species (no subspecies) are now recognised *viz*: *C.flava*, *C.lepidocera*, *C.demissa* and *C.serotina*. However, they point out that this is but a temporary measure in the face of the present unsatisfactory world-wide taxonomy of the group. Moreover, they do state that certain Irish plants match exactly with authentic Scandinavian material of *C.jemtlandica* and *C.bergrothii*, but question the specific distinctness of such taxa. They also consider that *C.flava* is now extinct in Ireland, the Lough Corrib formerly so-named, being most likely a fertile hybrid derivative of a *C.flava* x *lepidocarpa* cross.

However, the authors'views on hybrids within the group are possibly more contentious, for they state: "We prefer to retain the concept of hybrids for those taxa which are both morphologically intermediate and wholly sterile, a state which in this group one finds only in *C.demissa* x *flava* from N.Lancs." This viewpoint is surely unrealistic in the light of Davies(1955) work, and given that *C.demissa* x *serotina* is partially utricle-fertile (Wallace,1975).

C.muricata group

The practical new account of this group would seem to have a sound taxonomic foundation. Five taxa are now recognised for the British Isles, of which only three are known at present from Ireland, *viz*: *S.spicata*, *C.muricata* subsp.*lamprocarpa* and *C.divulsa* subsp.*divulsa*. The first is said to be "probably only casual in ... Ireland", and the second "uncommon" here. Rather, *C.spicata* is a very rare Irish

species with at least some long-standing northern stations, while *C.muricata* is rare, though somewhat under-recorded.

Carex hybrids

Most disappointingly, interspecific hybrids receive short shift treatment in the handbook, probably due to economies of space. Apart from a few general hints on hybrid recognition (p.10), it is stated that most hybrids only occur as isolated plants with the parents, though a few occur very frequently and can form extensive populations (eg. *C.demissa* x *hostiana*) or uniform swards through rhizome-spread (eg. *C.rostrata* x *vesicaria* and *C.elata* x *nigra*). Brief notes on other hybrids can be found throughout the handbook under the descriptions of the parent species.

However, some of the information is out-of-date; for example, *C. diandra* x *paniculata* (*C.*x *beckmannii*) is said not to occur in the British Isles, though all three authors confirmed as this, material collected/determined by me from Blarney, H 4, in 1979, and by F.E. Crackles from S.E.Yorks in 1960!

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Michael Long of Dingle (1899-1980) - An Appreciation

Michael Long (b. Dingle, Co.Kerry, 20 July 1899), the well-known marine biologist, died in the Bon Secour Hospital, Tralee, Co.Kerry, on the 10 March, 1980, and was buried in St Brendan's Cemetery, Dingle.

Michael Long was educated locally and lived all his life in Dingle, a town on the brink of the Atlantic, an area which was also the terrain of St Brendan the Navigator. From an early age, Michael served an apprenticeship in the family concern of boat building and ship chandlery. An association with the sea may have been in the family through the centuries. In *Sloinnte Gaedhael is Gall* (Woulfe, 1923), we learn concerning the name LONG (Ó Lúing) "derivation, *long*, a ship, a camp, - the name of an old family still numerous in Cork, Kerry and Limerick."

The contribution made by Michael Long to biological studies and in particular to the marine fauna of the south-west coast has been noted in tributes paid him in the *Irish Naturalists' Journal* (19,1978,177-179), by C.E.O'Riordan (National Museum of Ireland), by the late A.E.J. Went (former head of Fisheries) and by M.J.P.Scannell (National Botanic Gardens) - scientists who had association with the Dingle biologist over a period of time and who had benefited from his observant eye and full, prompt communications. The tributes reveal that the subject excelled in the study of marine animals, many of which were obtained in trawls off Slea Head - the most westerly promintory of green Atlantic Europe.

Michael Long added twelve species of invertebrates to the Irish fauna list, including the molluscs *Ranella olearium* (L.) and *Lutraria angustior* (Phillipi). He noted the rare drift organisms, the barnacle *Stomatolepas elegans* (Costa) and the mussel, *Brachidontes exustus* (L.). He extended the range of several species, notably *Charonia lampas* (L.), a gastropod collected at the extreme point of the Dingle peninsula, previously recorded as reaching its northern limit in the Bay of Biscay; of *Lithodes maja* (L.), an "arctic" crab, the first reliable record of the species in Irish waters came from the Dingle peninsula, it marks the most southerly point of distribution of this species.

Michael believed in sharing his knowledge. Anyone interested was shown specimens and illustrations and explanations were forthcoming. He conveyed his interest in rare fish and molluscs to trawler men. When sorting catches, they were often heard to say "there is one for Michy", and the specimen was set aside. Notes accompanying specimens to Dublin gave credit to the trawler and crew involved and so the pages of the *Irish Naturalists' Journal* carry the names of boats which fished out of Dingle harbour during the active life of Michael Long.

The National Herbarium at Glasnevin benefited from Michael Long's observations and plant gathering. Three hundred specimens enrich the collection. They include native plants of common daily experience, aliens and marine algae, almost all of which were obtained near Dingle and Ventry. Some of the specimens were first records for the botanic division South Kerry (H 1), and were published in the *Census Catalogue of the Flora of Ireland*(1972).

Innate modesty and goodness characterised Michael Long. He never sought the limelight and even on the occasion of his election to Honorary Life Membership of the Institute of Biology of Ireland, he asked another to accept the honour on his behalf (it was also partly due to age and inability to travel that he did not accept in person). On the occasion, in Tralee on April 14th 1978, Mr John Molloy of Fisheries delivered an illustrated lecture on the work of Michael Long. The tribute paid to him in the *Irish Naturalists' Journal* was reprinted in the local papers, the "Cork Examiner" and the "Kerryman."

Michael Long was a shy, courteous, thoughtful person. He had a high integrity and an inner strength derived from genuine goodness. He was self-effacing: to meet him one would not be aware of the immense local and other knowledge possessed by him. He was helpful to visiting botanists and provided them with information on the flora of the Dingle peninsula. He held membership of many societies in Ireland and Britain and was a strong supporter of local cultural and scientific matters. In the years before his death, he gathered specimens and artifacts for the Dingle Museum, now in St James' Church. In recent years, he sought to distribute books from his

library: to the National Botanic Gardens he donated two volumes of an illustrated work, *British Mosses*(F.E.Tripp,1888); to the Irish Biogeographical Society, he presented a run of *Watsonia*; and, to local friends and the local library other items.

While he was aware of the economic aspect of his study, Michael's deep interest lay in the phylogenetic and geographic distribution aspect of the organisms themselves. For him, the sea animals were full of wonder, they were *res mirabili*. I believe that Michael Long, as Guilliaume Appolinaire (poem "Zone", published in 1913), recognised that "parmi les algues nageant les poissons images due Saveur" ("in the seaweed fishes swim emblems of the Saviour" - translation by Samuel Beckett,1972).

Michael Long is survived by his wife, Caithlín, Ar Dheis Dé go raibh a hainm.

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